



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2006AZ132B

Title: Perfluorinated Chemicals in Municipal Wastewater Treatment Plants in Arizona

Project Type: Research

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End Date: 02/28/2007

Congressional District: 07

Focus Categories: Toxic Substances, Methods, Treatment

Keywords: Perfluorinated compounds; Perfluoroalkyl surfactants, Perfluorooctane sulfonate or PFOS; Perfluorooctane carboxylic acid or PFOA; Municipal wastewater treatment; Sludge; Biosolids; Sorption

Principal Investigators: Sierra, Reyes; Jordan, Fiona L.

Federal Funds: \$11,995

Non-Federal Matching Funds: \$24,023

Abstract: Perfluorooctane sulfonate (PFOS) and related perfluorinated organic compounds (PFCs) are emerging environmental pollutants. These compounds have come under increased scrutiny due to recent reports of their worldwide detection in biological matrices as well as concerns regarding their persistence and toxicity. In spite of the widespread occurrence of PFCs and their potential risks to human health and the environment, little is known about the fate and transport of these pollutants. Municipal wastewater treatment discharges are suspected to be responsible for environmental emissions of perfluorinated compounds. PFCs are expected to partition into sewage sludge (biosolids) due to their high bioaccumulation potential. There is presently no data on the occurrence of PFCs in wastewater treatment plants in Arizona, yet PFCs are extensively used in the growing semiconductor industry sector in the State and in a wide variety of other industrial, commercial and consumer applications.

This study will develop novel methods (F-NMR, HPLC/MS/MS) to detect and quantify PFCs in municipal wastewater and in sewage sludge, and then apply these methods to conduct a preliminary

evaluation of PFCs in selected municipal wastewater treatment plants in Arizona. Partitioning of PFCs into biosolids will also be investigated under well-defined laboratory conditions. The project is of particular significance for Arizona because biosolids are widely used as soil amendments throughout the State. Treated wastewaters containing PFCs could also be a source of environmental contamination with these persistent and toxic pollutants. Utilities and government agencies will be able to utilize information from this study to determine the need for implementing measures to prevent the spread of PFCs in the environment.

[U.S. Department of the Interior, U.S. Geological Survey](#)

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